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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HA, YVONNE QUY M

ART UNIT	PAPER NUMBER
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2664

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,777

Applicant(s)

BUNCE ET AL.

Examiner

Yvonne Q. Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-25 is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 14 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the frame structure of claims 2-11 limitations must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: "infiniband" misspelled on pg 12 of line 65. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-11, 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Roach et al. (US Patent 6,314,100).

Referring to claim 1, Roach discloses a network of computers having a dedicated storage network for retrieving data from storage (figure 6), a method of processing packets received on

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the storage network (figure 5), the method comprising the step of: storing a sequential indicator for indicating a sequence of a current frame within a set of frames (col. 5, lines 48-58).

Referring to claim 2, Roach discloses all aspects of the claimed invention and further teaches comparing a header field of the current frame with a header field of a previous frame; and generating the sequential indicator on the basis of a result of the comparing step (col. 6, lines 16-33).

Referring to claim 3, Roach discloses all aspects of the claimed invention and further teaches the header fields are indicative of respective originator exchange ID's of the current frame and the previous frame (col. 6, lines 16-33, i.e. source ID; figure 6, reference 602).

Referring to claim 4, Roach discloses all aspects of the claimed invention and further teaches the header fields are indicative of respective responder exchange ID's of the current frame and the previous frame (col. 6, lines 46-56, i.e. received frame; figure 6, reference 602).

Referring to claim 5, Roach discloses all aspects of the claimed invention and further teaches the header fields are indicative of respective source nodes of the current frame and the previous frame (col. 6, lines 16-23).

Referring to claim 6, Roach discloses all aspects of the claimed invention and further teaches the header fields are indicative of respective sequence ID's of the current frame and the previous frame (col. 6, lines 34-45).

Referring to claim 7, Roach discloses all aspects of the claimed invention and further teaches the header fields are indicative of respective sequence counts of the current frame and the previous frame (col. 6, lines 46-61, to start a new sequence).

Referring to claim 8, Roach discloses all aspects of the claimed invention and further teaches the comparing step includes determining whether the header field of the current frame is identical to the header field of the previous frame (col. 6, lines 57-67, compare previous frame).

Referring to claim 9, Roach discloses all aspects of the claimed invention and further teaches the comparing step includes determining whether a sequence count header field of the current frame differs by 1 from a corresponding header field of the previous frame (col. 6, lines 37-58).

Referring to claim 10, Roach discloses all aspects of the claimed invention and further teaches the previous frame was received immediately before the current frame (col. 6, lines 34-45, looping back to process a next frame).

Referring to claim 11, Roach discloses all aspects of the claimed invention and further teaches supplying the stored sequential indicator to a frame-processing unit (figure 6, reference 400, 608, i.e. protocol engine).

Referring to claim 18, Roach discloses apparatus adapted to process incoming data frames, comprising: a pre-processing block adapted to receive data frames (figure 4, reference 400); and a frame processing unit coupled to the pre-processing block (figure 4, references 408, 414); the pre-processing block is configured to compare a header field of a current frame with a header field of a previous frame (col. 5, lines 1-10) and to provide an output signal to the frame processing unit on the basis of the comparison of the header fields of the current and previous frames (col. 5, lines 16-47; col. 6, lines 1-8; figures 5&6)

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Referring to claim 19, Roach discloses all aspects of the claimed invention and further teaches the frame-processing unit includes a processor that operates under control of a stored program (col. 5, lines 31-47).

Referring to claim 20, Roach discloses all aspects of the claimed invention and further teaches the frame processing unit further includes a frame buffer that stores the incoming frames and the output signal, the frame buffer being accessible by the processor (col. 5, lines 16-21, figure 4, references 404, 406, 408, 414).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12, 13, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roach et al. (US Patent 6,314,100) in view of Kamoi et al. (USPUB 2001/0017858).

Referring to claims 12, 15, 16, Roach discloses a method of processing incoming data frames in a data communication system (figure 5), the method comprising the steps of: receiving a plurality of data frames one after the other (col. 3, lines 31-34); comparing a header field of a current frame with a header field of a previous frame (col. 6, lines 16-33). Roach failed to teach generating at least one bit based on a result of the comparing step; and providing the at least one bit to a frame processing unit. However, Kamoi discloses a structured continuous data transfer of frames where data segmented into cells. The CSI bit is set depending on the sequence count, which translates to a certain format with pointer (col. 2, paragraph 40). At the time of the

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invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Roach validation and host buffer allocation for unmapped frames with Kamoi determining the format of cells for reassembling by using the CSI bit based on sequence count and sequence number. The validation of received frames involve the host CPU, which limits frame transmission and reception rates and prevents the host CPU from performing other tasks. Each frame must pass through the host memory for header validation where the host must examine each frame header to determine if the frame is part of the current sequence. Therefore, the reduction of host interrupts, memory and bus bandwidth are desirable. By having an engine to perform header validation for unmapped frames and the process of determining the sequence of frames, expected frames, or last frames would require to have some sort of counter mechanism or bit setting to differentiating different categories of segmented frames that are coming in.

Referring to claim 13, Roach and Kamoi disclose all aspects of the claimed invention and further teaches the previous frame was received immediately before the current frame (col. 6, lines 34-45, looping back to process a next frame).

Referring to claim 17, Roach and Kamoi disclose all aspects of the claimed invention and further teaches the frame processing unit is a processor that operates under control of a stored program (col. 7, lines 9-19, i.e. protocol engine does the processing).

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roach et al. (US Patent 6,314,100) in view of Bilic et al. (USPUB 2001/0048681).

Referring to claim 22, Roach discloses all aspects of the claimed invention but failed to teach the frame processing unit includes a master processor and a plurality of second processors

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managed by the master processor; and selection of processor to process frames. However, Bilic discloses a network consisting of processor node, a host, gateway, and DMA engine to support other transport layer protocol and the method of processing incoming packets (col. 3, paragraph 42 - paragraph 44, figure 1). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Roach validation and host buffer allocation for unmapped frames with Bilic reassembly of data frames. The validation of received frames involve the host CPU, which limits frame transmission and reception rates and prevents the host CPU from performing other tasks. Each frame must pass through the host memory for header validation where the host must examine each frame header to determine if the frame is part of the current sequence. Therefore, the reduction of host interrupts, memory and bus bandwidth are desirable. By having different processors to perform header validation for unmapped frames and the process of determining the sequence of frames, expected frames, or last frames would require to have some sort of processing management to increase the efficiency of data mapping or reassembly.

Allowable Subject Matter

8. Claims 14 and 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

9. Claims 23, 24, and 25 are allowed.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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- Cheung et al. (US Patent 6,163,540) discloses establishing unique sequence ID
- Kim (US Patent 6,597,918) discloses transmitting/receiving long message in digital portable terminal
- Cowger et al. (US Patent 6,314,477) discloses performance of fiber channel protocol sequence reassembly
- Sandorfi et al. (US Patent 5,590,122) discloses reordering of frames

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvonne Q. Ha whose telephone number is 703-305-8392. The examiner can normally be reached on Monday-Friday 7a.m.-4p.m. Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ajit Patel can be reached on 703-308-5347. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

YQH


Ajit Patel
Primary Examiner